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# TEN NEW SPECIES OF *ERIOSPERMUM* JACQUIN (LILIACEAE) FROM THE WESTERN CAPE

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## ABSTRACT

Ten new species of *Eriospermum* from the western Cape are described. Of these 7 previously had manuscript names which are here validated. Discussion on the relationship of these to each other or previously described species, is included.

## UITTREKSEL

### TIEN NUWE *ERIOSPERMUM* JACQUIN (LILIACEAE) SPECIES VAN DIE WES-CAPE

Tien nuwe *Eriospermum*-species vanaf die Wes-Kaap word beskryf. Sewe van hulle het tevore manuskripname gehad wat hier gewettig word. 'n Bespreking van die verwantskap van hierdie species onderling en ander voorheen beskryfde species, word ook gedoen.

**Key words:** *Eriospermum*, sp. nov., Liliaceae, western Cape.

*Eriospermum* is a comparatively large genus distributed over most of sub-Saharan Africa, with a concentration of species in southern Africa, especially in the drier parts of the western Cape. Although usually placed in Liliaceae, it has some very distinctive features and in some classifications (Lotsy, 1911; Huber, 1977; and Dahlgren & Clifford, 1982) it has been placed in its own family Eriospermaceae.

Members of the genus are easily identifiable by the presence of an underground tuber and the seed which is covered by long hairs. The leaf, in most cases, is atypical of monocotyledons, having a petiole-like part, referred to as a leaf sheath, with frequently a broadly ovate or orbicular lamina. Usually only a single leaf is produced each year. Flowers tend to be small and of several different shapes, mostly quite distinctive, although in some cases they may be mistaken for other genera such as *Drimia* or *Ornithogalum*. If the complete plant is available, a number of characters make species identification comparatively easy. Unfortunately the majority of species, in

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particular those from the winter rainfall region, are hysteranthous, resulting in a vast amount of herbarium material which is incomplete.

Since Baker's revision of the genus in 1896, a considerable number of new species have been described and several people have worked on the genus. Notable among these are Rudolf Marloth and A. V. Duthie, who advanced knowledge of the genus considerably by amassing large collections of living and pressed material, for which they made detailed notes and drawings. In addition to the seven new species described by Marloth and six by Duthie, some fifty manuscript names have been attached to their sheets. Having myself studied some 750 living collections from many parts of southern Africa, as well as herbarium material in the main herbaria in South Africa and in several European countries, I feel in a position to comment on and validate some of their manuscript names. In addition to the seven species bearing Marloth's manuscript names and which are described here for the first time, three species, based on my own collections, are also newly described. These are related to some of the Marloth species.

**Eriospermum deserticolum** Marloth ex P. L. Perry, sp. nov; differt a speciebus omnibus aliis gemma longa acutaque, segmentis perianthii attenuatis, staminibus parvis. Ab *E. pusillum* et *E. exilis* tuberibus, rhizomis atque vagina folii pubescenti, distinguitur.

Plantae hysteranthae. *Tubera* irregulariter formata, 30 mm × 20 mm lata, rhizomatibus; caro alba; crescens acumen laterale. *Folium* erectum; vagina folii, quae eodem tempore est, usque ad 55 mm supraterranea, filo metallico similis, tecta pilis patentibus albisque; lamina variabilis magnitudine et farma, parva, ovata cordata vel anguste ovata usque ad lanceolatam, 125 mm longa, 27 mm lata; superficies ambae atrovirentes; apex acuminatus. *Scapus* usque ad 240 mm longus, filo metallico similis, ciliis minutis diaphanisque ad basim; bractea pedunculata 2–4 mm supraterranea, attenuata, undulata. *Racemus* secundus, usque ad 200 mm longus, usque ad 20 floribus. *Bracteae* 1,5 mm longae, albidae, carina dilute brunnea, attenuatae. *Pedicelli* 3–4 mm longi. *Perianthium* urceolatum; segmenta dimorpha, alba, extus costa dilute viridi usque ad rubellam, intus lampro-aurea; segmenta exteriora 7 mm longa, 2 mm parte latissima, elliptica, apice angusto attenuato plus quam 3 mm longo atque marginibus intro plicatis; segmenta interiora 8 mm longa, 3 mm lata, spathulata, apice angusto plus quam 4 mm longo, intro plicato, projecturis ciliatis secus marginem. *Stamina* adnata ad segmenta secundum 1,5 mm; fila alba, parvissima; antherae atropurpureae. *Ovarium* ovoideum, 1,5 mm altum, 1 mm latum. *Stylus* 1,5 mm longus.

*Type:* South Africa, Cape Province, 58 km Springbok towards Komaggas, fl. ex hort Karoo Botanic Garden, 24/2/1980, *Perry 1121* (NBG, holotype; K, PRE, isotypes). (Fig. 1).

*Plants* hysteranthous. *Tubers* irregularly shaped, rhizomatous, up to 30 mm × 20 mm across; rhizomes up to 120 mm long and 4 mm diameter; skin light brown; flesh translucent-white; growing point lateral. *Leaf* solitary erect; old persistent sheaths up to 120 mm below ground, membranous, tan-brown; contemporary leaf sheath exserted by up to 55 mm, wiry, barely 1 mm diameter, dark red, covered with patent white hairs; lamina variable in size and shape, in younger plants ovate-cordate and approximately 13 mm long and 9 mm wide becoming narrowly ovate to lanceolate, up to 125 mm long and 27 mm wide; both surfaces darkish green, glabrous, occasionally with a few hairs towards the base on the lower side and margin; apex acuminate. *Scape* up to 240 mm long, 0,5 mm diameter, wiry, reddish at the base, green above with faint red streaking, bearing minute tooth-like transparent cilia basally; peduncular bract exserted by 2–4 mm, pinkish-red, attenuate, margin undulate. *Raceme* tends to be secund, up to 200 mm long with up to 20 flowers. *Bracts* 1,5 mm long, membranous, whitish with faint brown keel, attenuate. *Pedicels* 3–4 mm long, whitish to pale green. Buds pointed. *Perianth* urceolate; segments dimorphic, dull whitish on the outside with a faint green midrib and suffused red streaking, inside translucent, shiny golden appearance, joined for more than 1 mm at the base; outer segments 7 mm long, elliptic basally, with a narrow attenuate tip over 3 mm long and margins folded inwards; inner segments 8 mm long spathulate basally, tip more than 4 mm long and folded inwards, transparent cilia-like projections along the margins; apices spreading to reflexed resembling a 6-point star. *Stamens* adnate to segments by 1,5 mm; filaments white, very small; outer narrowly ovate, less than 1 mm × 1 mm, inner triangular, slightly longer than outer; anthers deep purple, copious nectar produced at the base of the filaments. *Ovary* ovoid, 1,5 mm high, pale green with faint red spotting. *Style* 1,5 mm long, white.

Flowering time: February to March. Leafing period: March to October.

Distribution: *E. deserticolum* is found growing in clumps in the shade of rocks or shrubs on granite slopes or sandy gravel soils from the Richtersveld in the north through Namaqualand, to as far south as the Kamiesberg. (Fig. 3a).

The long pointed bud and flower with extra long perianth segments and small stamens, make this species quite distinct from all previously described species. In leaf it can usually be distinguished by the patent hairs along the leaf sheath.

Specimens incorporated into the National Herbarium at Pretoria and the herbarium at Stellenbosch, include several collections from Namaqualand with this very distinctive flower type. The manuscript names *E. meyeri*, *E. deserticolum* and *E. gracile* have been appended, apparently by Marloth, to different sheets. Among the information attached to the sheets is a typed

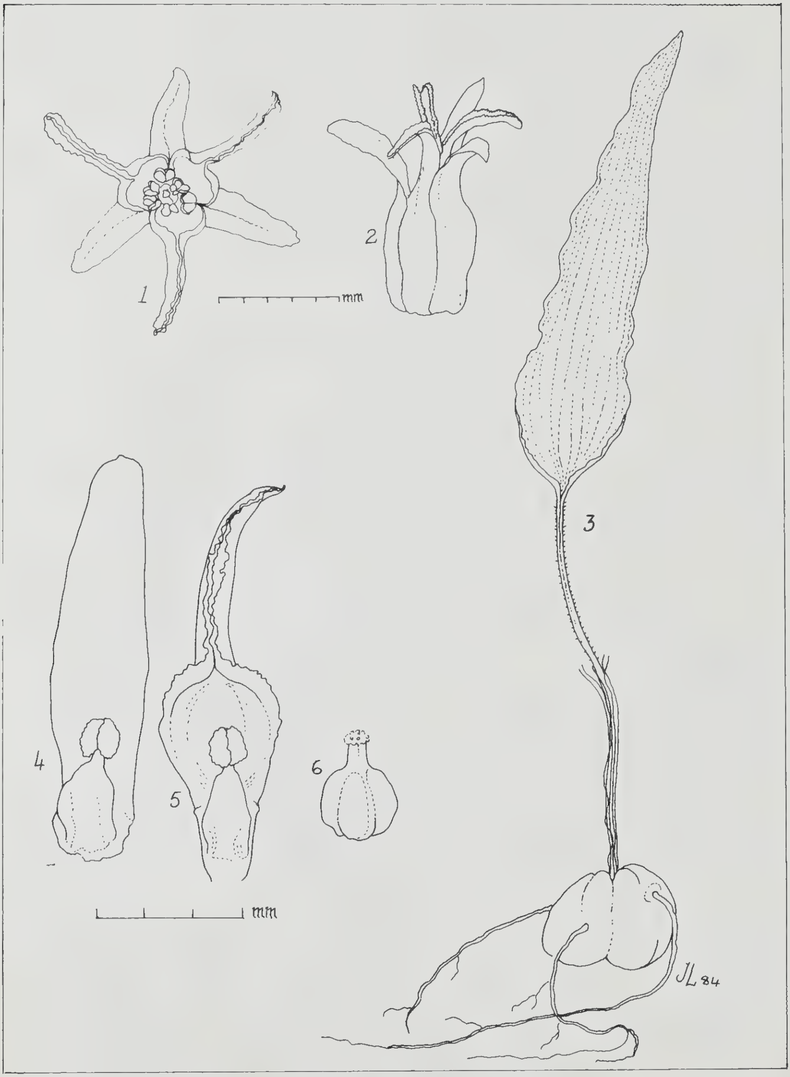

FIG. 1.

*Eriospermum deserticolum*. 1. Flower, face view; 2. Flower, side view; 3. Tuber and leaf, natural size; 4. Outer perianth segment and stamen; 5. Inner perianth segment and stamen; 6. Gynoecium. (*Perry 1051*, NBG).

note by Duthie, pointing out the similarity and the distinctiveness of the flowers and that they are very closely allied and posing the question "How do they differ?". Careful examination of these specimens and several living collections from the original localities indicates that they all belong to the same species and the name *E. deserticolum* has been chosen for this taxon.

A possible reason for the confusion of names may be the variability of leaves in this species, especially those of different ages and the more numerous vegetatively produced leaves from the ends of rhizomes. Young leaves tend to be broadly ovate–cordate and horizontal, whereas the adult leaf is erect and narrowly lanceolate with a long wiry contemporary leaf sheath about equal in length to the lamina and frequently covered with longish white hairs.

### Specimens examined

CAPE PROVINCE—2817 (Vioolsdrif): 13 miles north of Anenous towards Eksteenfontein (-CD), *Bruyns 1491* (NBG).
—2917 (Springbok): Steinkopf (-BC), *Duthie 640* (STE); Steinkopf, *Marloth 6979*, coll. Rev. Meyer (PRE); Steinkopf, *Marloth 6453* (STE); 1 km west of Steinkopf, *Perry 1051* (NBG); 20 km west of Springbok towards Spektakel (-DA), *Perry 1136* (NBG); 8 miles east of Springbok (-DB), *Bruyns 1732* (NBG); Springbok, *Marloth 2412, 1413* (STE); Springbok, *Marloth 6982* (STE, PRE); 58 km from Springbok towards Komaggas (-DC), *Perry 1121* (NBG); Komaggas, *Duthie 601* (STE).
—3017 (Hondeklipbaai): Kamieskroon (-BB), *Perry 363* (NBG).
—3018 (Kamiesberg): 18 km west of Platbakkies (-AD), *Perry 379* (NBG).

**Eriospermum exilis** P.L.Perry, sp. nov.; differt ab *E. deserticolum* et *E. pusillum* folio erecto glabro anguste lanceolato.

Plantae hysteranthae. *Tuber* pyriforme, 15–20 mm altum, 12 mm latum; caro alba; crescens acumen basale. *Folium* erectum; vagina folii, quae eodem tempore est, usque ad 10 mm supraterranea, filo metallico similis; lamina anguste lanceolata usque ad falcatam, usque ad 95 mm longa, 4 mm lata, glauco-viridis, glabra. *Scapus* usque ad 140 mm longus, filo metallico similis; bractea pedunculata admodum visibilis supraterranea, membranacea. *Racemus* usque ad 75 mm longus, 14 mm latus, usque ad 16 floribus. *Bracteae* 1 mm longae, membranaceae, carina atrobrunnea. *Pedicelli* usque ad 4 mm longi. *Perianthium* campanulatum; segmenta dimorpha, luteola, carina viridi; segmenta exteriora anguste elliptica, 4 mm longa, 1,5 mm lata, apicibus attenuatis retrorsisque; segmenta interiora spathulata, 4 mm longa, 2 mm lata, apice angusto attenuatoque, lateribus intro plicatis. *Stamina* segmentis celata, fila late lanceolata, 1 mm longa, adnata ad segmenta; antherae luteae. *Ovarium* globosum, 1,25 mm latum. *Stylus* minus quam 1 mm altus.

*Type:* South Africa, Cape Province, Karoopoort, fl. ex hort. Karoo Botanic Garden, January 1981 and 17th January 1983, *Perry 949* (NBG, holotype; PRE, isotype). (Fig. 2).

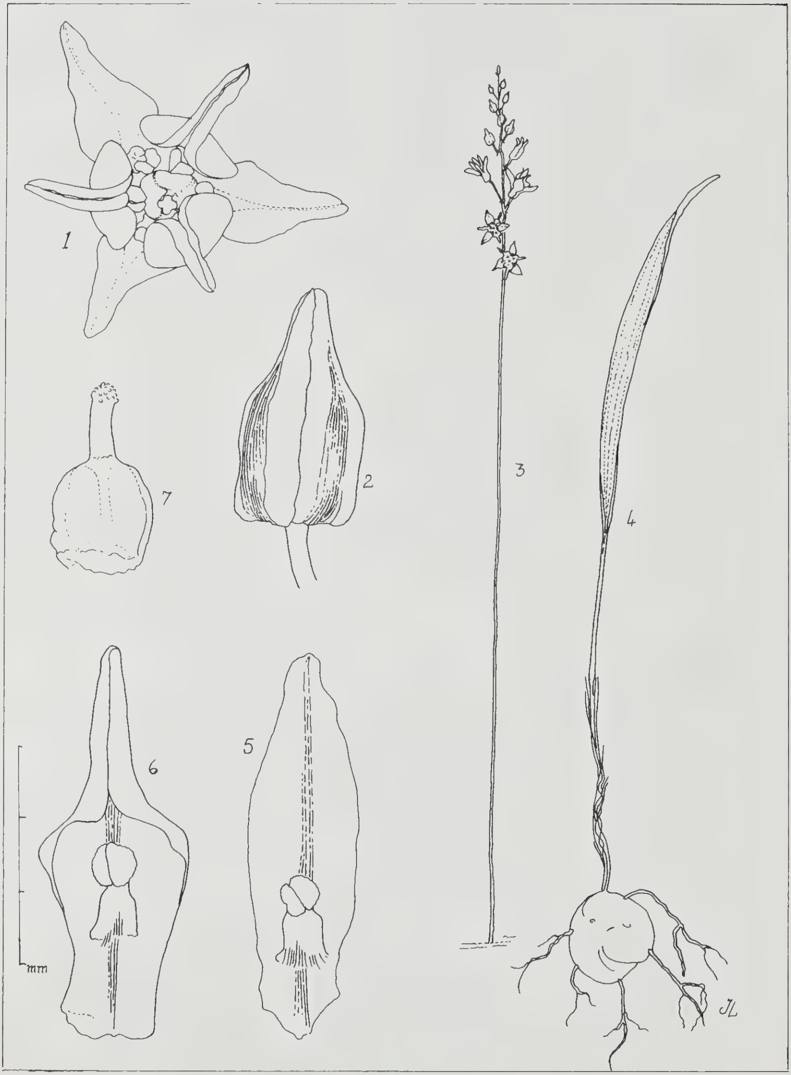

FIG. 2.

*Eriospermum exilis*. 1. Flower, face view; 2. Flower bud; 3. Inflorescence; 4. Tuber and leaf, natural size; 5. Outer perianth segment and stamen; 6. Inner perianth segment and stamen; 7. Gynoecium. (*Perry 949*, NBG).

*Plants* hysteranthous. *Tuber* solitary, pyriform, 15–20 mm high and up to 12 mm wide; skin thin and pale brown; flesh white; growing point basal. *Leaf* solitary, erect; old persistent sheaths 90 mm long, slender fibrous, greyish-brown; contemporary sheath exserted up to 10 mm, wiry, green to reddish glabrous; lamina very narrowly lanceolate to falcate, gradually tapering to the base, up to 95 mm long and 4 mm wide, glaucous green, glabrous, acuminate. *Scape* up to 140 mm long, wiry, less than 1 mm diameter, red at the base turning to green higher up; peduncular bract just exserted, transparent membranous with a reddish tip, amplexicaul except for the top, 1,5 mm. *Raceme* up to 75 mm long and 14 mm wide with up to 16 flowers. *Bracts* 1 mm long, transparent-membranous with dark brown keel. *Pedicels* lowest up to 4 mm when in flower, pale green. *Perianth* campanulate; segments dimorphic, pale yellowish with a green keel; outer segments narrowly elliptic, 4 mm long, 1,5 mm broad, with attenuate retrorse tips; inner spathulate becoming narrow-attenuate and folded inwards in the top half, 4 mm long, 2 mm broad. *Stamens* almost completely hidden by segments, filaments broadly lanceolate, 1 mm long, adnate to segments, yellowish-white; anthers yellow. *Ovary* globose, 1,25 mm across, pale green. *Style* less than 1 mm high, white.

Flowering time: January to March. Leafing period: April to October.

Distribution: this species is so far only known from a few scattered plants found in two localities, both on steep shady south east-facing slopes in damp pockets amongst quartzitic rocks. (Fig. 3b).

The long narrow erect leaf with wiry contemporary leaf sheath of this species could be mistaken for *E. graminifolium*; in which case it can be distinguished by the white flesh of the tuber as opposed to the red flesh in *E. graminifolium*. In flower these two species may be separated by the more compact inflorescence and shorter pedicels in *E. exilis*. On one of Marloth's herbarium sheets containing specimens of *E. fllicaule* there are two leaves from Tweedside. Although there are no flowers, the locality and shape of the leaves suggest that they actually belong to *E. exilis*.

### SPECIMENS EXAMINED

CAPE PROVINCE—3319 (Worcester): Karoopoort (-BC), *Perry 949* (NBG). —3320 (Montagu): Tweedside (-AB), *Marloth 12070* (PRE); Whitehill (-BA), *Perry 957* (NBG).

**Eriospermum pusillum** P.L.Perry, sp. nov.; magnitudine parva omnium, lamina orbiculari cristis prominentibus longitudinalibusque, subtilibus floribus apicibus attenuatis in segmentis distinguitur.

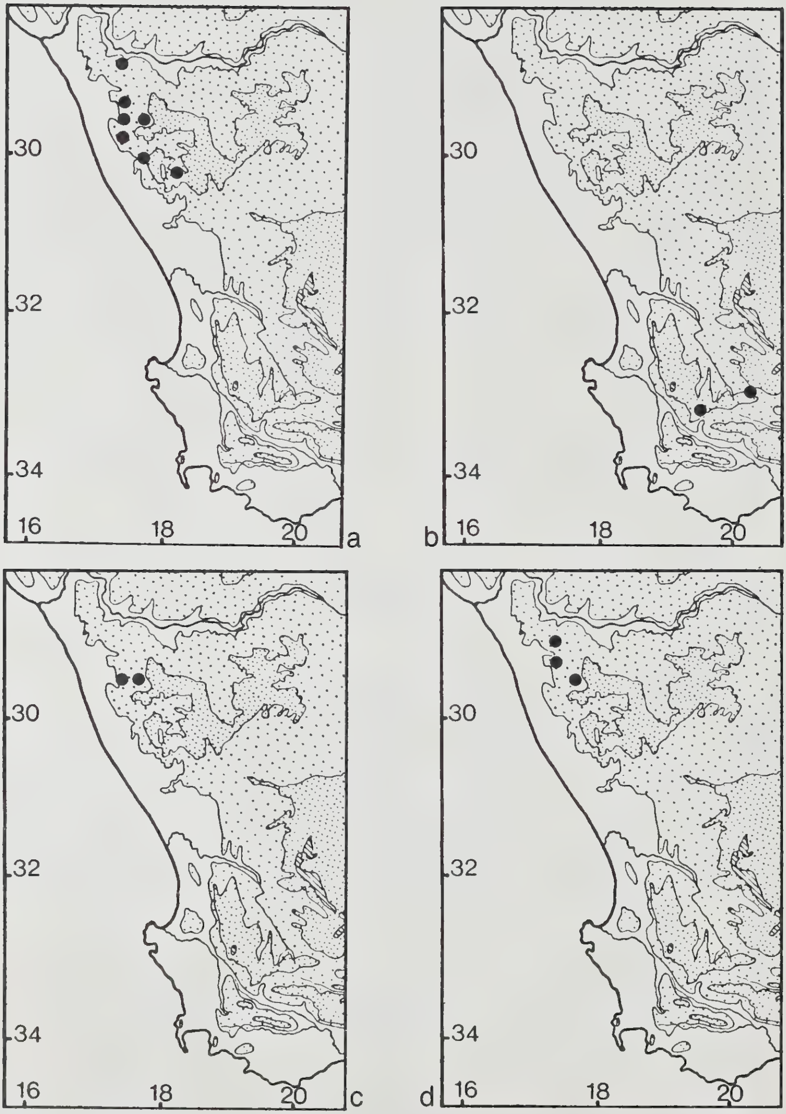

Fig. 3.

(a) Distribution of *Eriospermum deserticolum*; (b) Distribution of *Eriospermum exilis*; (c) Distribution of *Eriospermum pusillum*; (d) Distribution of *Eriospermum filicaule*.

Plantae hysteranthae. *Tuber* irregulare, usque ad 17 mm longum, 10 mm diam.; caro alba; crescens acumen laterale. *Folium* solitarium, prostratum; vagina folii, quae eodem tempore est, haud exserta; lamina orbiculata cordata, usque ad 15 mm lata, 11 mm longa, glabra, cristis prominentibus longitudinalibusque. *Scapus* usque ad 50 mm longus, filo metallico similis; bractea pedunculata admodum visibilis supraterranea. *Racemus* laxus, usque ad 22 mm longus, 5–7 floribus. *Bracteae* saccatae vel cymbiformes, 1–2 mm longae, membranaceae carina rubri-brunnea. *Pedicelli* usque ad 3 mm longi. *Perianthium* calathforme; segmenta dimorpha, connata secundum 1 mm ad basim, alba, carina viridirubra; segmenta exteriora 4 mm longa, 1,25 mm lata, elliptica, apicibus leviter attenuatis; segmenta interiora 3,5 mm longa, 1,5 mm lata, late spathulata, apicibus longis attenuatis intro plicatis. *Stamina* brevia, minus quam 1 mm longa, adnata ad segmenta per 1,5 mm; antherae rubro-purpureae. *Ovarium* globosum, 1 mm latum. *Stylus* minus quam 1 mm longus.

*Type:* South Africa, Cape Province, Hester Malan Nature Reserve, Springbok, ex hort. Karoo Botanic Garden, 18/12/1979, *Bruyns 1486* (NBG). (Fig. 4).

*Plants* hysteranthous. *Tuber* solitary, irregular, small, up to 17 mm long and 10 mm diameter; outer skin light brown; inner flesh white; growing point lateral. *Leaf* solitary, old persistent leaf sheaths fibrous, up to 80 mm long; contemporary sheath barely exserted; lamina prostrate, orbicular-cordate, up to 15 mm broad and 11 mm long, green, glabrous with prominent longitudinal ridges, dried leaf persistent till flowering. *Scape* up to 50 mm long and 0,5 mm diameter, red at the base, shading to pale green above; peduncular bract just reaching ground level, surrounded and hidden by old sheathing bases, very thin-membranous, non-amplexicaul part acute, 1,5 mm, purplish. *Raceme* lax, up to 22 mm long, 5–7-flowered. *Bracts* saccate or cymbiform, 1–2 mm long membranous-white with reddish-brown keel. *Pedicels* ascending, up to 3 mm long, white. *Perianth* cup-shaped; segments dimorphic, connate for 1 mm at the base, white with green keel sometimes overlaid with faint red streaking; outer segments 4 mm long and 1,25 mm wide, elliptic with extended base and slightly attenuate tips; inner segments 3,5 mm long and 1,5 mm at widest part, broadly spathulate with long attenuate tips folded inwards. *Stamens* short; filaments less than 1 mm long, broader at the base and tapering towards the anther, arising 1,5 mm up the inner segments; anthers reddish-purple. *Ovary* globose, 1 mm long and 1 mm broad. *Style* less than 1 mm long, white. Copious nectar produced at the base of the ovary.

Flowering time: December to February. Leafing period: April to October.

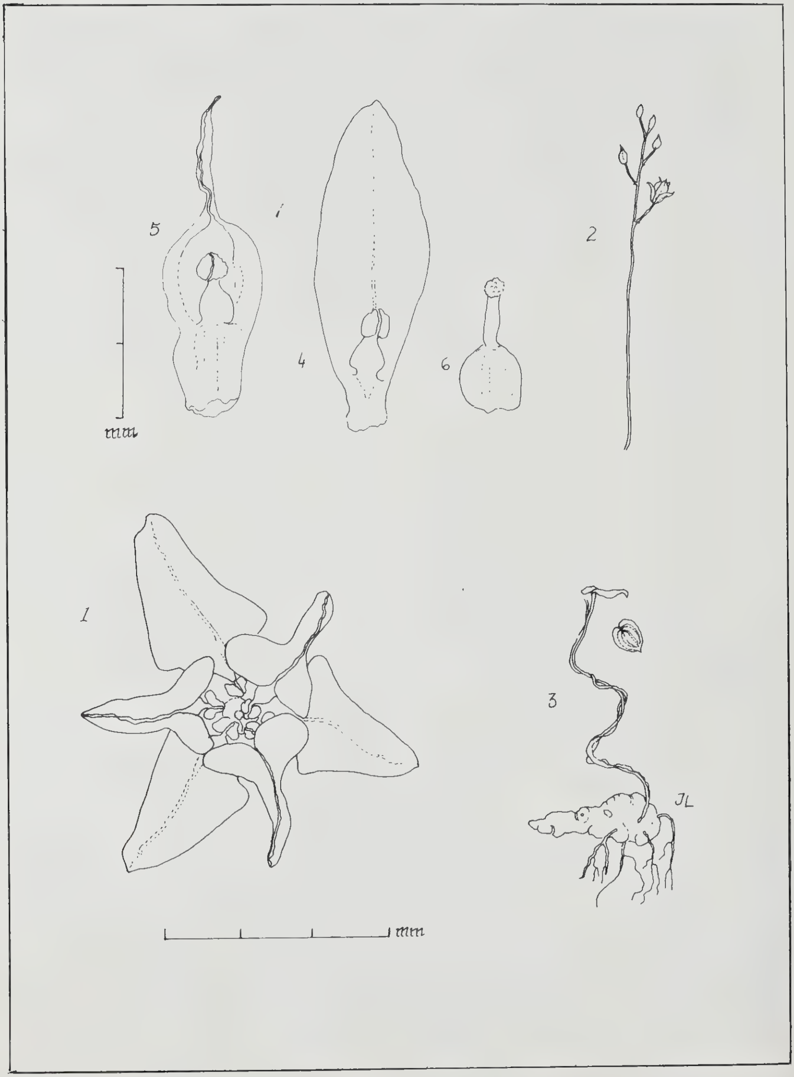

FIG. 4.

*Eriospermum pusillum*. 1. Flower, face view, 2. Inflorescence, natural size; 3. Tuber and leaf, natural size; 4. Outer perianth segment and stamen; 5. Inner perianth segment and stamen; 6. Gynoecium. (*Perry 1137*, NBG).

Distribution: *E. pusillum* is found in moist shaded areas in rich gravelly soil amongst rock and low karroid bushes. To date it has only been found in two areas near Springbok but the small round leaf could easily be missed among other green ground foliage and it may prove to be more widespread. (Fig. 3c).

This species is distinguished by the consistent small size of all its parts. The ridged effect on the tiny orbicular leaf is characteristic. The few-flowered delicate inflorescence and flowers with white perianth segments help to distinguish it from its closest relatives *E. deserticolum* and *E. exilis*.

### SPECIMENS EXAMINED

CAPE PROVINCE—2917 (Springbok): 6 km east of the top of Spektakel Pass (-DA), *Müller-Doblies 79097* (NBG); 20 km west of Springbok towards Spektakel, *Perry 1137* (NBG, PRE); Hester Malan Nature Reserve (-DB), *Bruyns 1486* (NBG).

**Eriospermum filicaule** Marloth ex P. L. Perry, sp. nov.; differt a speciebus omnibus aliis inflorescentia laxa, pedicellis filo metallico similibus flexuosisque, dimensionibus florum parvorum. Regio puberula ad basim vaginae folii, quae eodum tempore est, atque ad basim scapi inter species alias non invenitur.

Plantae hysteranthae. *Tuber* irregulare, usque ad 20 mm latum; caro subrosea; crescens acumen laterale. *Folium* erectum; vagina folii, quae eodum tempore est, circa 70 mm supraterranea, rubella, trichomatibus latissimis albisque ad basim, altius viridis et glabra; lamina lanceolata usque ad 55 mm longa, 9 mm lata, viridis, glabra, tenuis. *Scapus* usque ad 90 mm longus, filo metallico similis, atroruber, puberulous ad basim, altius viridis glaberque, parum incrassatus infra pedicellum primum. *Racemus* laxissimus, flexuosus, 10–20 floribus. *Bracteae* lanceolatae, auctae, 1 mm longae, membranaceae. *Pedicelli* erecto-patentes, arcuati, infimi usque ad 85 mm longi, supremi 10 mm, filo metallico similissimi. *Perianthium* parvum, segmenta dimorpha, alba, carina viridi-rubra; segmenta exteriora expansa, anguste elliptica, 3,5 mm longa, 1,25 mm lata; segmenta interiora erecta, late spathulata, 2,5–3 mm longa, 2 mm lata, parum fimbriate, coartata in apicibus. *Stamina* paene longa quam segmenta perianthii; fila exteriora late lanceolata, interiora adnata ad segmenta per plus quam 1 mm, pars libra abrupte decrescens; antherae viridi-caeruleae. *Ovarium* vix 1 mm globosum, viride. *Stylus* vix 1 mm longus, cylindricus albus.

*Type:* South Africa, Cape Province, 1 km west of Steinkopf, ex hort. Karoo Botanic Garden, 17/03/1982, *Perry 1048* (NBG). (Fig. 5).

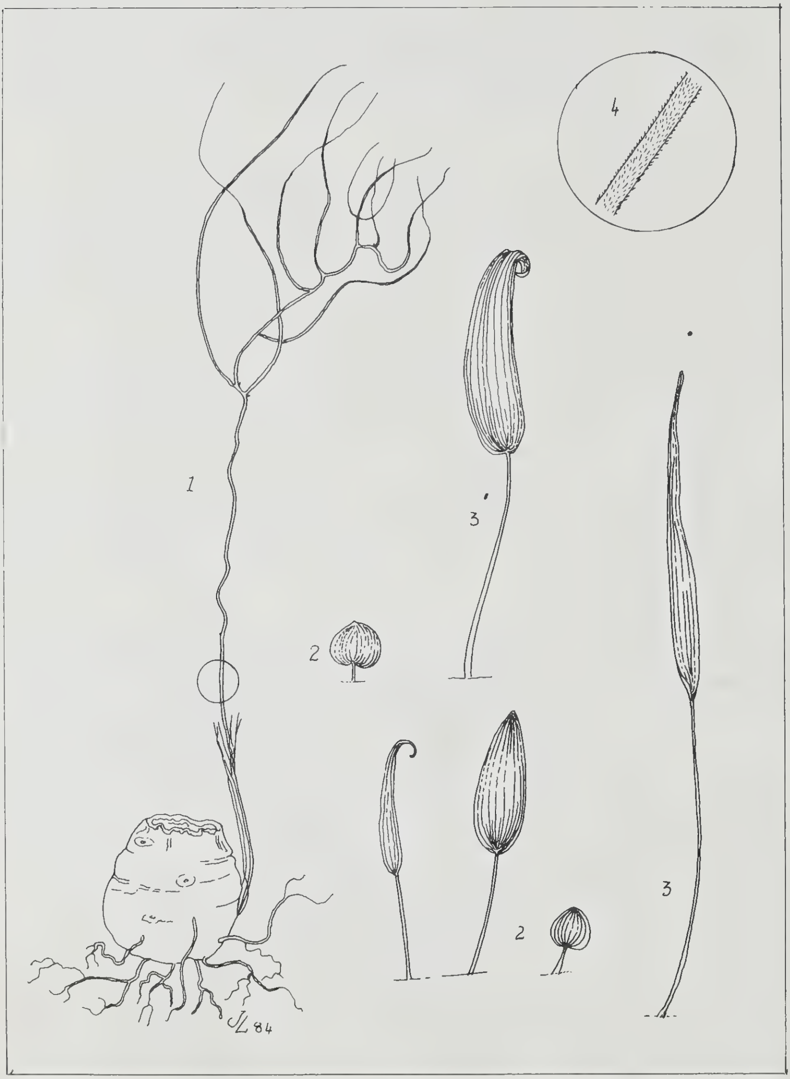

FIG. 5.
*Eriospermum filicaule*. 1. Tuber and inflorescence drawn from herbarium specimen; 2. Leaf from immature plant; 3. Leaf from mature plant. 4. Portion of base of scape magnified. (*Müller-Doblies 79216*, NBG).

*Plants* hysteranthous. *Tuber* roundish to irregular, up to 20 mm across; skin thin, light brown; flesh soft and juicy, pale pink in the older part; growing point basal with a lateral groove. *Leaf* solitary, erect; old persistent sheathing bases up to 60 mm long, membranous, chestnut-brown to greyish; contemporary leaf sheath exserted approximately 70 mm, up to 1 mm diameter, reddish with short white trichomes at the base, gradually becoming green and glabrous towards the lamina; lamina lanceolate up to 55 mm long and 9 mm wide, bright green, glabrous on both surfaces, shiny on the lower surface, mat on the upper surface, thin-textured. *Scape* up to 90 mm long, very wiry, dark red and puberulous at its base, becoming green and slightly thicker a few millimetres below the first pedicel. *Raceme* very lax, flexuose, 10–20 flowers. *Bracts* lanceolate-acute, 1 mm, membranous. *Pedicels* erecto-patent, arcuate, lowest up to 85 mm long, upper 10 mm, green, very wiry. *Perianth* small; segments dimorphic, white with a green keel and some red streaking; outer segments spreading, narrow elliptic-acute, 3,5 mm long; inner segments erect, broadly spathulate, 2,5–3 mm long, slightly fimbriate with pinched-in tips. *Stamens* nearly as long as perianth segments; outer filaments ovate-acute to broadly lanceolate, inner adnate to segments for more than 1 mm, free part narrowing abruptly; anthers turquoise. *Ovary* globose, 0,75 mm–1 mm, green. *Style* cylindrical, 0,75 mm–1 mm long, white. *Capsule* clavate.

Flowering time: March. Leafing period: April to October.

Distribution: *E. filicaule* is not common and so far has been found only in a limited area around Steinkopf in flat stony ground among karroid bushes. (Fig. 3d).

The inflorescence of *E. filicaule* is very distinctive from all other species because of its lax and very wiry flexuose appearance and small flowers. The pilose region at the base of the scape and also at the base of the contemporary leaf sheath are also good distinguishing characters. The leaf is similar in shape to the adult leaves of *E. deserticolum* which is found in the same district. The latter however, invariably produces rhizomes and so is usually found in larger colonies with smaller leaves of different shapes. The hairs on the contemporary leaf sheath are also much longer in *E. deserticolum*.

### SPECIMENS EXAMINED

CAPE PROVINCE—2917 (Springbok): Between Steinkopf and Anenous Pass (-BA), *Müller-Doblies 79 216* (NBG): 1 km west of Steinkopf (-BC), *Perry 1048* (NBG); Near Steinkopf, *Marloth 6432, 6452, 6552, 6525* (PRE); Springbok (-DB), *Herre 2415* (PRE).

**Eriospermum minutiflorum** Marloth ex P. L. Perry, sp. nov.; differt a speciebus omnibus aliis flore parvo globosoque atque pedicello incrassato sub flore. Differt ab *E. parvifolium* tubere formae irregularis atque carnis rubrae.

Plantae hysteranthae. *Tuber* irregulare, circa 25 mm altum, 50 mm latum; caro rubra; crescens acumen basale. *Folium* erectum; vagina folii, quae eodem tempore est, usque ad 10 mm supraterranea; lamina ovata vel elliptica, usque ad 70 mm longa, 55 mm lata; superficies ambae glauco-virides, glabrae, aliquantum coriaceae. *Scapus* usque ad 100 mm longa, 1 mm diam.; bractea pedunculata vix visibilis supraterranea, membranacea, apice interdum rubello retrorsoque. *Racemus* usque ad 140 mm longus, 15 mm latus, 16–30 florubus. *Bracteae* deltatae, vix 1 mm longae. *Pedicelli* usque ad 6 mm longi, erecto-patentes florescentia, erectiores fructificantes incrassati ad basim floris. *Perianthium* globosum, saepe vix aperiens; segmenta subaequalia, albida, carina atrovirenti; segmenta exteriora elliptica, 2,5 mm longa, 1,5 mm lata; segmenta interiora late spathulata, apice leviter coartato et crenutato, 2 mm longa, 1,8 mm lata. *Stamina* adnata ad basim segmentorum; fila subaequalia, late ovata, complanata, 1 mm longa, 1 mm lata, antherae albae. *Ovarium* globosum, 1 mm latum, viride, maculis bruneis. *Stylus* 1 mm longus.

*Type:* South Africa, Cape Province, Grootvlei Pass, fl. ex hort. Karoo Botanic Garden, 10/05/1980, *Perry 1130* (NBG, holotype; K, PRE, MO, isotypes). (Fig. 6).

*Plants* hysteranthous. Tuber solitary, irregular, approximately 25 mm high and 50 mm across; outer skin pale brown; inner flesh pale pink in the younger part, becoming beetroot-red in the older part; growing point basal. *Leaf* solitary, erect, old persistent leaf sheaths up to 150 mm long, greyish-brown, fibrous; contemporary leaf sheath exserted up to 10 mm, 1 mm diameter, white or dark reddish to reddish-pink, glabrous; lamina, ovate or elliptic, up to 70 mm long and 55 mm wide; glaucous green both surfaces, glabrous, somewhat leathery; margin entire, undulate; base obtuse, apex apiculate. *Scape* up to 100 mm long and 1 mm diameter; dark purple streaked with a greyish bloom higher up; peduncular bract barely exserted above ground, membranous, amplexicaul except for top 3 mm, acute, sometimes reddish and retrorse. *Raceme* up to 140 mm long and 15 mm across with 16–30 flowers. *Bracts* deltate, barely 1 mm long, membranous-white with a brown midrib, lower ones spurred, surrounding the base of the pedicels. *Pedicels* up to 6 mm long, erecto-patent in flower becoming more erect and close to the rachis in fruit, covered with a greyish bloom, thickened towards the base of the flower. *Perianth* globose, often barely opening; segments subequal, whitish with dark green keel overlaid with red streaking, especially on the underside; outer segments elliptic, 2,5 mm long and 1,5 mm wide, apex acute; inner segments broadly spathulate or almost orbicular,

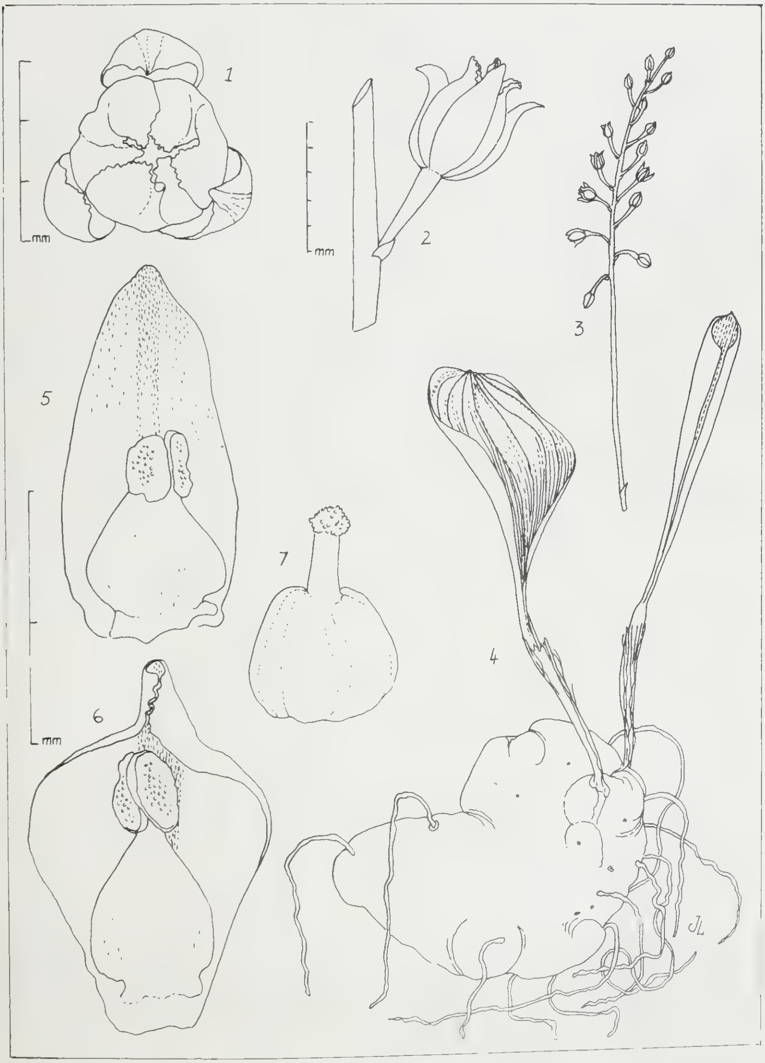

FIG. 6.

*Eriospermum minutiflorum*. 1. Flower, face view; 2. Flower and pedicel, side view; 3. Inflorescence; 4. Tuber and leaf, natural size; 5. Outer perianth segment and stamen; 6. Inner perianth segment and stamen; 7. Gynoecium. (*Perry 1130*, NBG).

apex slightly pinched in and frilled, 2 mm long and 1,8 mm wide. *Stamens* adnate to the base of segments; filaments subequal, broadly ovate, flattened, 1 mm long and 1 mm wide at the base; inner very slightly narrower than outer; white or reddish-purple, fleshy; anthers white. *Ovary* globose, 1 mm × 1 mm, pale green with small reddish-brown blotches. *Style* cylindrical, barely 1 mm, cream.

Flowering time: March–May. Leafing period: April–October.

Distribution: *E. minutiflorum* appears to have a very limited distribution in the Grootvlei and Bitterfontein area of Namaqualand. It has been found in dry clayey soil in a flattish area among bushes such as *Rhus* sp. and *Lebeckia* sp., and where geophytes are numerous. (Fig. 8a).

In flower this species is easily recognisable as it differs in several respects from all other known species. The small globose flower and thickening of the pedicel, where it supports the flower, are particularly characteristic. In leaf *E. minutiflorum* could be mistaken for *E. parvifolium*, which has a similar shaped erect leaf, although the lower surface of the lamina in *E. parvifolium* tends to be much lighter in colour than the upper surface, whereas in *E. minutiflorum* there is no colour distinction between the two surfaces. However, to be certain of identification in the vegetative stage it is necessary to study the tubers of the two species which are quite distinct, *E. parvifolium* having a globose, white fleshed tuber with apical growing point and *E. minutiflorum* an irregular shaped, red-fleshed tuber with basal growing point.

Several manuscript names were used by Marloth and Duthie for this species. Marloth chose the name *E. minutiflorum* for his *13710*. Duthie considered her No. *635* to be a distinct species and first suggested the name *E. parviflorum* as being appropriate. Later the name *E. micranthum* was suggested because she felt the name *E. parviflorum* might lead to confusion with *E. parvifolium*. Duthie's *E. micranthum* and Marloth's *E. minutiflorum* are clearly the same species and here the name *E. minutiflorum* is adopted for this newly described species.

### SPECIMENS EXAMINED

CAPE PROVINCE—3017 (Hondeklipbaai): 4,7 km east of farm, Grootvlei Pass (-BB), *Perry 1130* (NBG).

—3118 (Van Rhynsdorp): Bitterfontein (-AB), *Marloth 13710* (PRE, STE); Namaqualand, *Duthie 635, 637* (STE).

**Eriospermum flabellatum** Marloth ex P. L. Perry sp. nov.; differt ab *E. bowieanum* vagina folii brunnea, longiori, filo metallico similiore, quae eodem tempore est, atque tuberibus gracilioribus, nitentibus, perviridibus, facialibus.

Plantae hysteranthae. *Tuber* irregulariter formatum, usque ad 45 mm latum, 25 mm altum; caro rubra; crescens acumen basale usque ad laterale. *Folium* appendicibus erectis facialibus; vagina folii, quae eodem tempore est, 40 mm supraterranea, filo metallico similis, laete brunnea, glabra; lamina multum deminuta, ovata, cordata, usque ad 6 mm lata, atrovirens, margine revoluto; superficies tecta tuberibus circa 20 numero, anguste teres, 2–4 ramis in dimidio superiore, usque ad 20 mm longa, atrovirens. *Scapus* 18 mm longus, filo metallico similis. *Racemus* compactus usque ad 8 mm, cira 8 floribus. *Bracteae* deltatae, 1 mm longae, membranaceae, carina brunnea. *Pedicelli* 2,5 mm longi. *Perianthium* calathiforme; segmenta dimorpha, 5 mm longa, paene 2 mm lata, alba, carina viridi-brunnea; segmenta exteriora leviter effusa, elliptica; segmenta interiora erecta, apices leviter crenati. *Stamina* subaequalia; fila late lanceolata, interiora longiora quam exteriora; antherae luteae. *Ovarium* globosum, 1,5 mm latus. *Stylus* 1 mm longus.

*Type:* South Africa, Cape Province, 18 km from Laingsburg towards Ladismith, fl. ex hort Karoo Botanic Garden, April 1979, *Bayer 515* (NBG). (Fig. 7).

*Plants* hysteranthous. *Tuber* solitary, irregularly shaped, up to 45 mm wide and 25 mm high; skin light brown; flesh red; growing point basal to lateral. *Leaf* solitary; old persistent leaf sheaths up to 80 mm long, greyish-brown; contemporary leaf sheath exserted 40 mm, wiry, 0,5 mm diameter, light brown, glabrous; lamina greatly reduced, ovate or orbicular-cordate, up to 6 mm across, dark green, glabrous, margin revolute; upper surface covered with enations about 20 in number, narrowly terete with 2–4 branches in the upper half, up to 20 mm long, dark green. *Scape* 18 mm long, wiry, 0.5 mm diameter with about 8 flowers. *Bracts* deltate, attenuate, 1 mm long, membranous, brown-keeled, half amplexicaul. *Pedicels* 2,5 mm long in flower, glabrous. *Perianth* cup-shaped; segments dimorphic, 5 mm long and nearly 2 mm wide, white with green keel and red flecked; outer segments slightly spreading, elliptic; inner segments erect with slightly crimped tips. *Stamens* subequal; filaments broadly lanceolate, outer 1,75 mm long and barely 1 mm at the widest part, inner 2,5 mm long and more than 1 mm at the widest part; anthers yellow. *Ovary* globose, 1,5 green. *Style* 1 mm long, white.

Flowering time: April. Leafing period: April to October.

Distribution: *E. flabellatum* is not a common species and appears to have a limited distribution in areas around Laingsburg in the southern part of the great Karoo. It grows in dry stony areas where succulents and karroid bushes are found. (Fig. 8c).

The facial appendages and small inflorescence make *E. flabellatum* clearly distinguishable from all other species with the exception of *E. bowieanum*

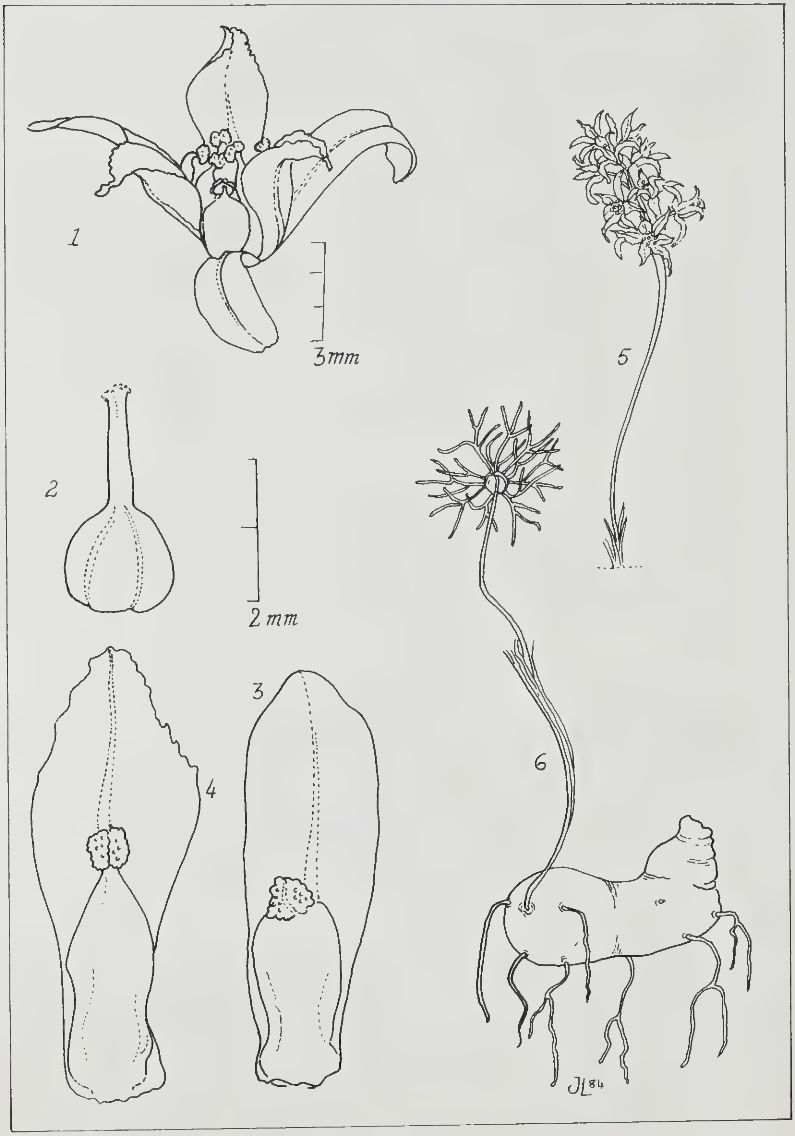

FIG. 7.

*Eriospermum flabellatum*. 1. Flower, side view; 2. Gynoecium; 3. Outer perianth segment and stamen; 4. Inner perianth segment and stamen; 5. Inflorescence; 6. Tuber and leaf, natural size. (*Bayer 2971*, NBG).

which it closely resembles. However, detailed study shows several differences. *E. flabellatum* has a longer and more wiry contemporary leaf sheath which is light brown in colour as opposed to the thicker white sheath of *E. bowieanum*. The facial appendages are more consistent in length, more slender and a dark shiny green in *E. flabellatum*, not dull glaucous green as in *E. bowieanum*. The tuber of *E. flabellatum* is more variable in shape with a lateral or basal growing point. The inflorescence is not spicate as in *E. bowieanum* and individual flowers are larger with segments at least 1 mm longer and pedicels 1,5 mm longer.

Marloth described another similar species, *E. coralliferum* in *South African Gardening and Country Life* (1929), from leaves and tubers collected in the Robertson Karoo, by Hurling and Neil. These two species have been discussed fully by Duthie (1940) when she concludes that Marloth's *coralliferum* is identical with Baker's *E. bowieanum*. At the same time Marloth's

script name *E. flabellatum*. This Duthie also suggests is a form of *E. bowieanum* with more slender processes. However, having seen several living collections, *E. flabellatum* appears to be a distinct but closely related species.
collection *14121*, from Barrydale, is mentioned, to which he gave the manu-

SPECIMENS EXAMINED

CAPE PROVINCE—3220 (Sutherland): 44 miles north of Laingsburg (-DC or -DD), *Acocks 14319* (PRE).
—3320 (Montagu): 18 km from Laingsburg towards Ladismith (-DB), *Bayer 515* (NBG); Kareevlakte, *Compton 8785* (NBG); Barrydale (-DC), *Marloth 14121* (PRE).

**Eriospermum namaquanum** Marloth ex P. L. Perry, sp. nov.; a speciebus aliis inflorescentia eius subcorymbosa, floribus maximis segmentis perianthii recurvis, distinguitur.

Plantae hysteranthae. *Tubera* multiplicia, usque ad 25 mm alta, 45 mm lata; pellis coriacea atque maculota; caro flavido-alba; radices orientes annulo prope basim; crescens acumen apicale. *Folium* semierectum; vagina folii, quae eodem tempore est, 20–50 mm supraterranea, supra sulcata; lamina ovata, usque ad 70 mm longa, 1,5 mm diam., carnosa usque ad coriaceum, glabra. *Scapus* usque ad 65 mm longus, 1,5 mm diam; bractea pedunculata 5–6 mm supraterranea, ovata, apiculata, viridis evadescens membranacea. *Racemus* laxus, subcorymbosus, 20–50 mm longa, 45 mm latus, 7–12 floribus. *Bracteae* deltatae, saccatae, 2 mm longae, membranaceae, albae, carina rubra. *Pedicelli* infimi usque ad 20 mm longi. *Perianthium* effusum usque ad recurvum, usque ad 20 mm latum; segmenta aequalia anguste elliptica, 11 mm longa, 3 mm lata, alba, carina viridi-rubra. *Stamina* erecta, aequalia; fila peranguste lanceolata, 5 mm longa, 1,5 mm lata, alba; antherae luteae.

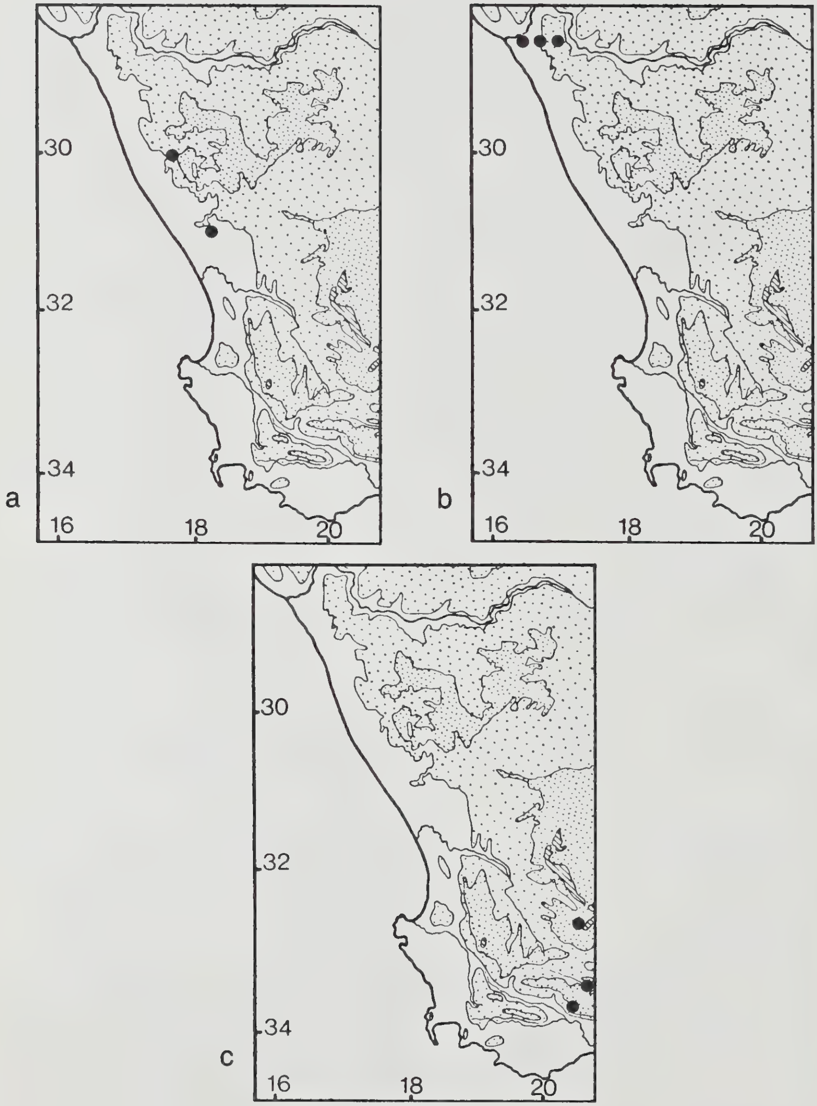

FIG. 8.
(a) Distribution of *Eriospermum minutiflorum*; (b) Distribution of *Eriospermum namaquanum*; (c) Distribution of *Eriospermum flabellatum*.

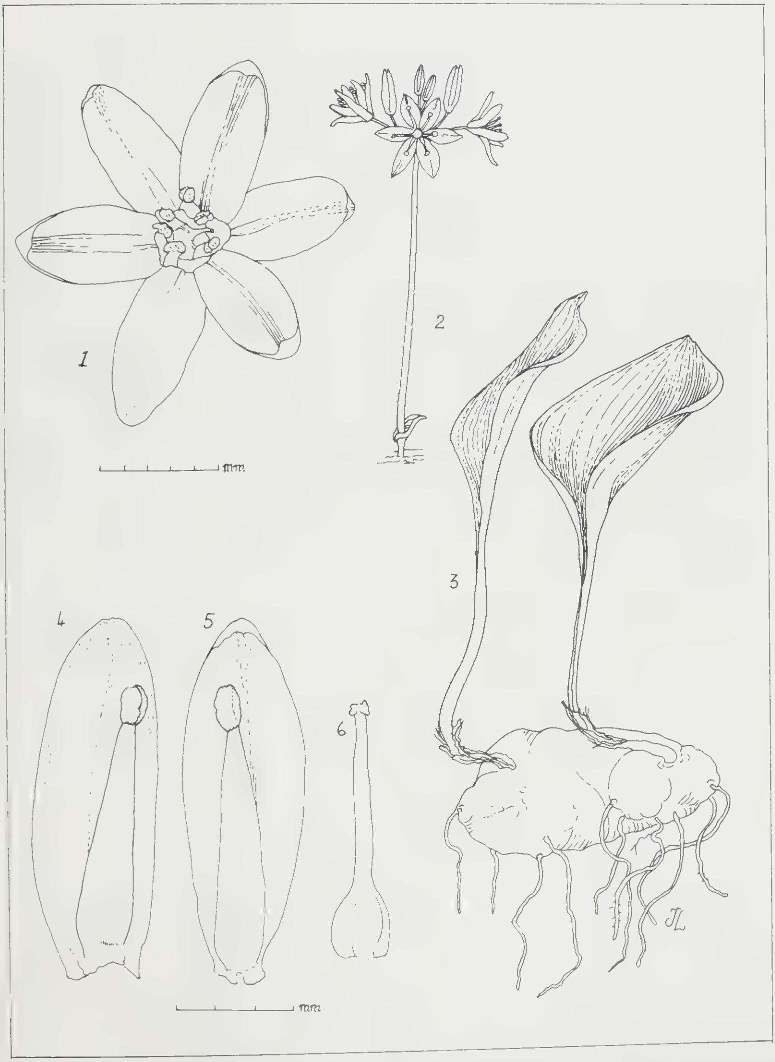

FIG. 9.
*Eriospermum namaquanum*. 1. Flower, face view; 2. Inflorescence; 3. Tuber and leaves, natural size; 4. Outer perianth segment and stamen. 5. Inner perianth segment and stamen; 6. Gynoecium. (*Bayer 1025*, NBG).

*Ovarium* ovoideum, 2 mm altum, 1,5 mm latum, album. *Stylus* 3 mm longus.

*Type:* South Africa, Cape Province, Richtersveld, Dolomite Peaks, fl. ex hort. Karoo Botanic Garden, 10/3/1980, *Perry 1081* (NBG, holotype; PRE, isotype). (Fig. 9).

*Plants* hysteranthous. *Tubers* multiple, formed from several individual tubers joined together, up to 25 mm high and 45 mm across; skin pale greyish-brown with a mottled appearance when dried, coriaceous; flesh yellowish-white; roots arising in a ring near the base; growing point apical. *Leaf* solitary; semi-erect; old persistent sheaths 90 mm long and 8 mm across, widening to 15 mm near ground level, membranous, light greyish-brown; contemporary leaf sheath exserted 20–50 mm, grooved so that the base of the lamina is folded in on the upper side, white at the base becoming green above; lamina ovate, up to 70 mm long and 50 mm at its widest, green both surfaces, fleshy to coriaceous, glabrous, conspicuous close longitudinal veins especially on the underside, margin entire. *Scape* up to 65 mm long and 1,5 mm diameter, greyish-green with faint red spotting, glabrous; peduncular bract exserted 5–6 mm above ground, ovate-apiculate, green becoming membranous. *Raceme* lax, almost corymbose, 20 to 50 mm long and 45 mm across, 7–12 flowers. *Bracts* deltate, saccate, semi-amplexicaul, 2 mm long, membranous-white with red keel and spotting. *Pedicels*, lowest up to 20 mm long. *Perianth* spreading to recurved, up to 20 mm across; segments equal, narrowly elliptic, 11 mm long and 3 mm wide, joined at the extreme base only, white with a green keel and faint red streaking. *Stamens* erect, equal, outer and inner nearly the same height; filaments very narrowly lanceolate, 5 mm long and 1,5 mm wide at the base, tapering to 0,5 mm where the anthers are joined, white; anthers dorsifixed, introrse, yellow. *Ovary* ovoid, 2 mm high and 1,5 mm at its widest, white. *Style* 3 mm long, slightly twisted, white.

Flowering time: February–March. Leafing period: April to October.

Distribution: *E. namaquanum* appears to be restricted to the western part of the Richtersveld where it is found in the sandy flats and extending into the rocks of the Dolomite Peaks. Populations in these areas are comparatively large. (Fig. 8b).

This species should not easily be confused with any other taxon from a similar locality. The white reflexed flowers are extra large for the genus and nearest to them would be the flowers of *E. paradoxum*, in which case the more compact inflorescence and less reflexed flowers make them distinct. In leaf it is nearest to *E. parvifolium* and is most easily separated from that species by the tough mottled skin of the tuber.

SPECIMENS EXAMINED

CAPE PROVINCE—2816 (Oranjemund): Arrisdrif, Richtersveld (-DA), *Hall 622* (NBG); Beauvalon, *Williamson 2945* (BOL); 2 km east of Beauvalon, *Bayer 1025* (NBG); Kortdoringberg, Alexander Bay, *van Jaarsveld 5427* (NBG); Camp south of Doornpoort (-DB), *Marloth 12305* (PRE).
—2817 (Vioolsdrif): Dolomite Peaks (-CA), *Perry 1081* (NBG); Dolomite Peaks, *Mitchell 369* (NBG).

**Eriospermum breviscapum** Marloth ex P. L. Perry, sp. nov.; *E. zeyheri* affinis, sed separatus longitudine scapi magnopere redacta, racemo compacto conicoque, floribus albis.

*Plantae* hysterathae. *Tubera* pyriformia vel oblonga, usque ad 75 mm × 30 mm; caro alba; crescens acumen basale usque ad oblongum. *Folium* prostratum; vagina folii, quae eodem tempore est, haud exserta; lamina orbiculata cordata, usque ad 80 mm lata, 60 mm ex apice ad lobos, clare viridis, leviter carnosa, glabra. *Scapus* usque ad 30 mm longus, 2 mm diam., glaber; bractea pedunculata admodum visibilis supraterranea, succulenta, clare viridis, evadescens membranaceae. *Racemus* compactus, anguste conicus, usque ad 80 mm longus, 20 mm latus, usque ad 100 floribus. *Bracteae* deltatae, usque ad 1 mm longae vel obsoletae, albae. *Pedicelli* 3–6 mm longi. *Perianthium* rotatum, dulciter odoratum; segmenta subaequalia, alba, carina viridirubra; segmenta exteriora 4 mm longa et 2 mm lata, interiora 5 mm longa et 2 mm lata. *Stamina* erecta, conniventia, annulum facientia circa ovarium; fila oblonga, complanata, 2 mm longa, 1,5 mm lata, apiculata, alba; antherae luteae. *Ovarium* globosum, 1,25 mm lata, viride. *Stylus* 1 mm longus.

*Type:* South Africa, Cape Province, 13,3 km east of Bonnievale railway line, just west of Drew, fl. ex hort. Karoo Botanic Garden, March 1978, *Perry 132* (NBG). (Fig. 10).

*Plants* hysteranthous. *Tubers* solitary, pyriform to horizontally oblong, up to 75 mm × 30 mm; skin tough, light brown, flesh white; growing point basal to lateral. *Leaf* solitary, prostrate; old persistent sheaths up to 80 mm long and 10 mm diameter, greyish-brown, membranous; contemporary leaf sheath not exserted; lamina firmly adpressed to the ground, orbicular-cordate, up to 80 mm across and 60 mm from apex to lobes and 45 mm apex to depression, bright green both surfaces, sometimes reddish below, slightly fleshy, glabrous, margin entire. *Scape* erect, rigid, up to 30 mm long and 2 mm diameter, faintly red-streaked, glabrous; peduncular bract just visible above ground, succulent, bright green becoming brown, membranous with red on margin and apex margins involute, tip acute to attenuate. *Raceme* compact, narrowly conical, up to 80 mm long and 20 mm across with up to 100 flowers. *Bracts* triangular, up to 1 mm long or obsolete, white. *Pedicels*

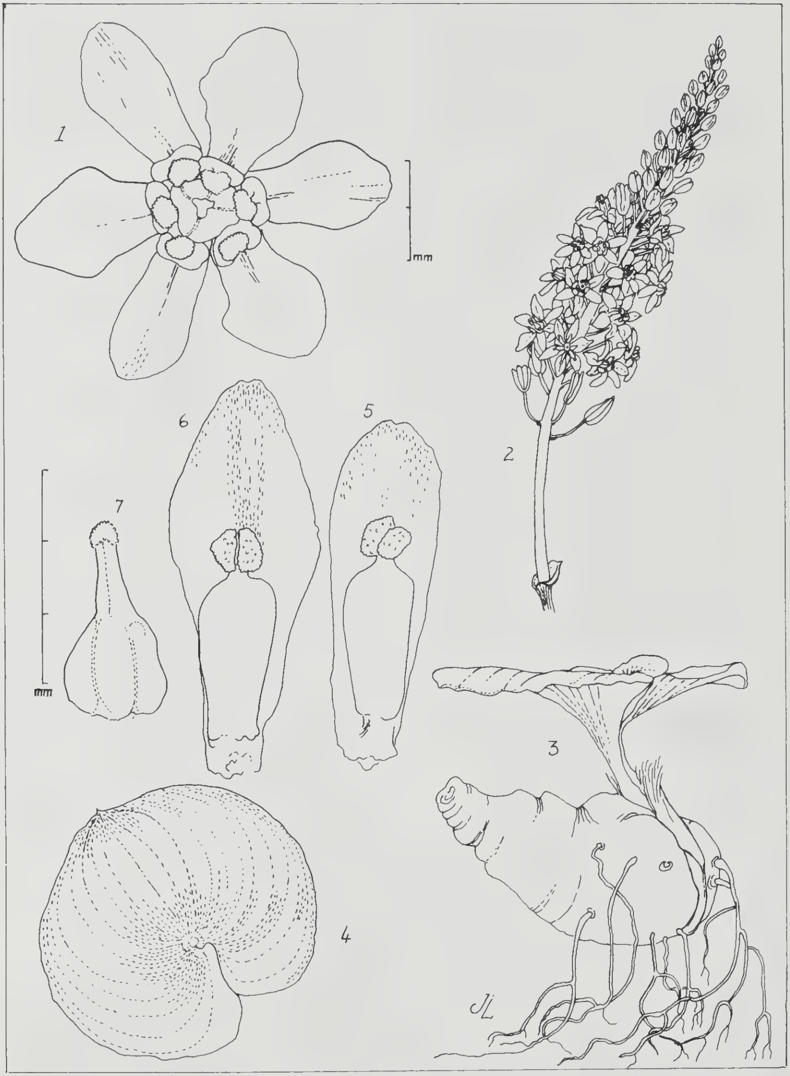

FIG. 10.
*Eriospermum breviscapum*. 1. Flower, face view; 2. Inflorescence, natural size; 3. Tuber and leaf, side view; 4. Leaf, from above. 5. Outer perianth segment and stamen; 6. Inner perianth segment and stamen; 7. Gynoecium. (*Bohnen 7816*, NBG).

lower 3–6 mm in flower, becoming shorter above, red-streaked. *Perianth* rotate, sweetly scented; segments subequal, white with a green keel and red streaks on the underside, reddish-purple at the apex; outer segments 4 mm long and 2 mm wide, inner 5 mm long and 2 mm wide. *Stamens* erect, connivent, forming a ring round the ovary; filaments spathulate, flattened, 2 mm long and 1,5 mm at the widest part near the top, apiculate, white; anthers yellow, versatile. *Ovary* globose, 1,25 mm across, green. *Style* cylindrical, 1 mm long, greenish-yellow.

Flowering time: February to March. Leafing period: April to October.

Distribution: *E. breviscapum* is frequent in the Worcester–Robertson Karoo, where it appears to be confined to the flat areas on clayey, sometimes stony, soil. (Fig. 13a).

*E. breviscapum* is very closely related to *E. zeyheri*, having the same distinctive rotate-shaped flower with erect stamens forming a ring round the ovary. It is separated from that species by the great reduction in length of the scape, the compactness of its raceme and the white perianth segments. The orbicular, prostrate leaf and white-fleshed tuber make the two species indistinguishable in the vegetative stage. At present they can be separated on locality, *E. zeyheri* being an eastern Cape species and *E. breviscapum* having a more limited distribution in the western Cape.

### Specimens Examined

CAPE PROVINCE—3319 (Worcester): Chavonnes (-CB), *Perry 206* (NBG); Brewelskloof, *Perry 214* (NBG); Brandwag building plots, *Perry 1387* (NBG); Near main picnic site on the Worcester to Robertson road, *Perry 271* (NBG); Old Golf Course, Worcester, *Duthie 699* (STE); Lemoenpoort (-CD), *Perry 681* (NBG); Robertson district (-DD), *Duthie 555, 556, 574* (STE).
—3320 (Montagu): Drew (-CC), *Perry 132* (NBG).
—3420 (Bredasdorp): Swellendam (-AB), *Perry 730* (NBG); de Hoop (-AD), *Snijman 115* (NBG).

**Eriospermum descendens** Marloth ex P. L. Perry, sp. nov.; *E. zeyheri* affinis, sed separatus multitubere, auctibus externis crassis rhizomatosis, caespes foliorum simul multorum formantibus.

Plantae hysteranthae. *Tubera* multiplicia, auctibus externis crassis rhizomatosis, massam 150 mm vel plus et aliquando descedentem ad 100 mm latam formantibus; pellis coriacea; caro flavoalba, crescens acumen laterale. folium prostratum; vagina folii, quae eodem tempore est, haud exserta; lamina orbiculata cordata, usque ad 85 mm lata, 60 mm ex apice ad depressionem, viridis, glabra, carnosa. *Scapus* 60 mm longus et 2 mm diam; bractea pedunculata admodum visibilis supraterranea, alba apice rubro. *Race-*

*mus* compactus, auguste conicus, usque ad 90 mm longus, circa 40 floribus. *Bracteae* vestigiales, albae. *Pedicelli* 4 mm longi, patentes. *Perianthium* rotatum, 10 mm latum; segmenta subaequalis, spathulata, exteriora 4 mm long et 1,5 mm lata, interiora 5 mm longa et 2 mm lata, cremea, carina viridibrunnea. *Stamina* erecta, annulum facientia circa ovarium; fila oblonga, apiculata, exteriora 1,75 mm longa et 1,25 mm lata, interiora leviter longiora et angustiora, alba. *Ovarium* globosum, 1,5 mm altum, 1,5 mm latum, viride. *Stylus* 1 mm longus.

*Type:* South Africa, Cape Province, Van Rhynsdorp, Farm Atties, fl. ex hort. Karoo Botanic Garden, 19/3/1980, *Perry 1021* (NBG, holotype; K, PRE, isotypes). (Fig. 11).

*Plants* hysteranthous. *Tubers* multiple due to thick rhizomatous outgrowths forming solid clumps 150 mm or more across and sometimes descending to 100 mm; outer skin thick-coriaceous, light grey-brown; inner flesh yellowish-white; growing point lateral. *Leaf* one per growing point, prostrate; old persistent sheaths up to 90 mm long and 7 mm across, pale brown, membranous; contemporary leaf sheath not exserted beyond the persistent bases; lamina firmly adpressed to the ground, orbicular, deeply cordate with lobes sometimes overlapping, up to 85 mm across and 60 mm from the apex to the depression where the leaf sheath arises, green, glabrous, fleshy, longitudinal and transverse veins close together and showing up well in dried material, margin red. *Scape* 60 mm long and 2 mm diameter, glabrous, green with slight red streaking; peduncular bract just visible above ground, white with red tip. *Raceme* compact, narrowly conical, up to 90 mm long, about 40 flowers. *Bracts* vestigial, slightly below the pedicel, white. *Pedicels* 4 mm long patent, reddish. *Perianth* rotate, faint sweet perfume, 10 mm across; segments subequal, spathulate, outer 4 mm long and 1,5 mm broad, inner 5 mm long and 2 mm wide, cream with pale green keel overlaid with brown streaking. *Stamens* erect, forming a ring round the ovary; filaments joined to the extreme base of the segments, oblong with apiculate tip supporting the anther, outer filaments 1,75 mm long and 1,25 mm wide, inner slightly longer and narrower, white. *Ovary* globose, 1,5 mm high and 1,5 mm across, green. *Style* cylindrical, 1 mm long, yellow.

Flowering time: February to April. Leafing period: April to October.

Distribution: *E. descendens* has a comparatively restricted distribution in the western Cape from the Van Rhynsdorp area north to the Richtersveld. It is found mainly on light sandy and granite soils in dry areas. (Fig. 13b).

*E. descendens* has close affinities with *E. zeyheri*, having very similar rotate flowers although the considerably shorter scape normally helps to separate them in the reproductive stage. The main distinguishing character of this

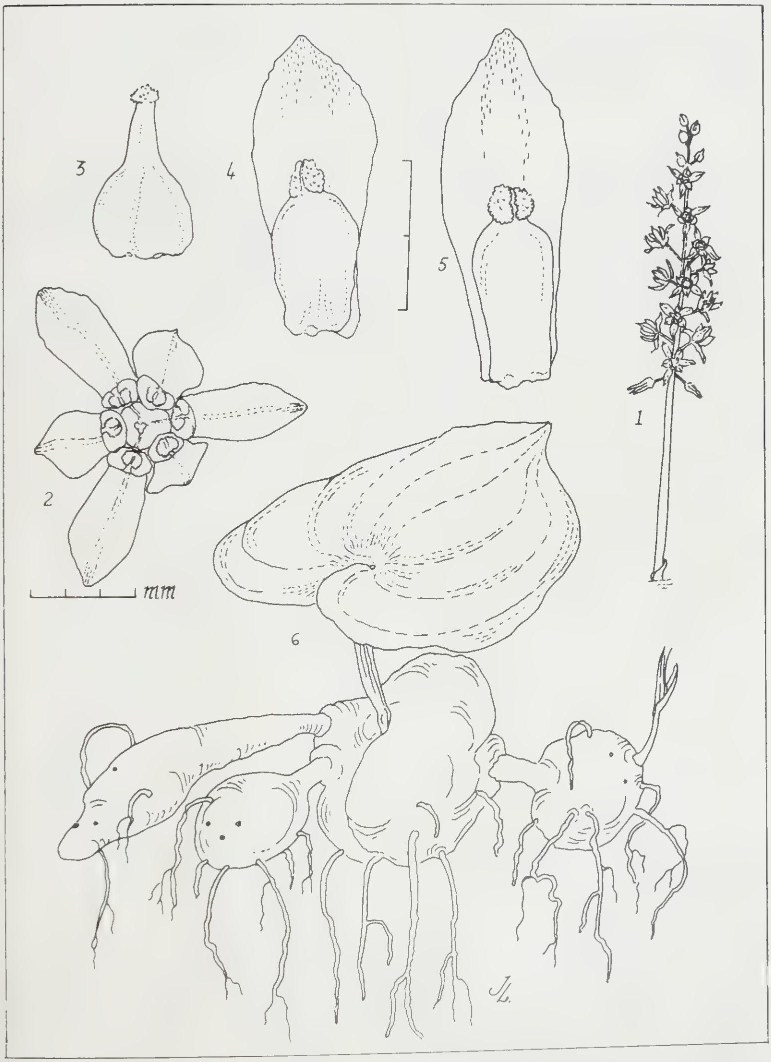

Fig. 11.

*Eriospermum descendens*. 1. Inflorescence, half natural size; 2. Flower face view; 3. Tuber and leaf; 4. Outer perianth segment and stamen; 5. Inner perianth segment and stamen; 6. Gynoecium. (*van Jaarsveld 4390*, NBG).

species is the tuber. The thick multi-directioned outgrowths form a massive irregular shaped tuber with several growing points, often resulting in a clump of closely packed overlapping leaves. This is unknown in any other species.

### Specimens Examined

CAPE PROVINCE—2917 (Springbok): Steinkopf (-BC), *Marloth 13281* (PRE); Steinkopf, *Duthie 773, 2424* (STE); O'Kiep (-DB), *Marloth 11959* (PRE); Driekoppen, S of Springbok, *Perry 1545* (NBG); Near Driekoppies farm house, *van Berkel 153, 322* (NBG); Brakputz (-DC), *van Jaarsveld 5323* (NBG).
—3017 (Hondeklipbaai): Kamieskroon (-BB), *Marloth 13695* (STE).
—3118 (Van Rhynsdorp): Farm Kwaggaskop, Van Rhynsdorp (-BC), *van Jaarsveld 4390* (NBG); Old Sout Rivier Bridge, *Bruyns 1660* (NBG); Farm Atties, Van Rhynsdorp (-DA), *Perry 1021* (NBG).

**Eriospermum bayeri** P. L. Perry, sp. nov.; *E. zeyheri* affinis, sed folio erecto lanceolato, teretivagina folii extensa usque ad 30 mm supraterranea separatus.

*Plantae* hysteranthae. *Tuber* pyriforme, usque ad 60 mm altum, 20 mm latum; caro alba; crescens acumen basale. *Folium* erectum; vagina, quae eodem tempore est, usque ad 30 mm supraterranea, 1,5 mm diam, glabra; lamina lanceolata, usque ad 100 mm longa, 25 mm lata; superficies ambae glauco-virides, glabrae, leviter undulatae. *Scapus* usque ad 300 mm longus, 2,5 mm diam; bractea pedunculata usque ad 30 mm supraterranea, carnosa, puberula, apice retrorso. *Racemus* densus, usque ad 150 mm longus, 25 mm latus, usque ad 70 floribus. Bracteae variabiles, usque ad 1,5 mm longae vel paene obsoletae, translucidae, membranaceae, carina viridi. *Pedicelli* 2–7 mm longi, patentes. *Perianthium* rotatum, circa 12 mm latum; segmenta post meridiem recurvascentia, aequalia usque ad subaequalia; spathulata, usque ad 5,5 mm longa, 3 mm lata, pallide viridia, carina viridi-rubra. *Stamina* erecta, conniventia, annulum facientia circa ovarium; fila oblonga, apiculata, 3 mm longa, 1,5 mm lata, alba; antherae luteae. *Ovarium* ovoideum circa 2 mm altum, 1,5 mm diam., clare viride. *Stylus* 1,25 mm longus.

*Type:* South Africa, Cape Province, Worcester, Karoo Botanic Garden, fl. 23/3/1977, *Perry 51* (NBG, holotype; K, PRE, isotypes). (Fig. 12).

*Plants* hysteranthous. *Tuber* solitary, pyriform, older tubers sometimes becoming irregular and knobbly with young tubers on the side, up to 60 mm high and 20 mm at the widest; outer skin pale brown, thin; inner flesh white; growing point basal with shoot passing upward in a lateral groove. *Leaf* solitary erect; old persistent sheaths up to 70 mm long, light to greyish-brown, membranous; contemporary leaf sheath exserted up to 30 mm, terete,

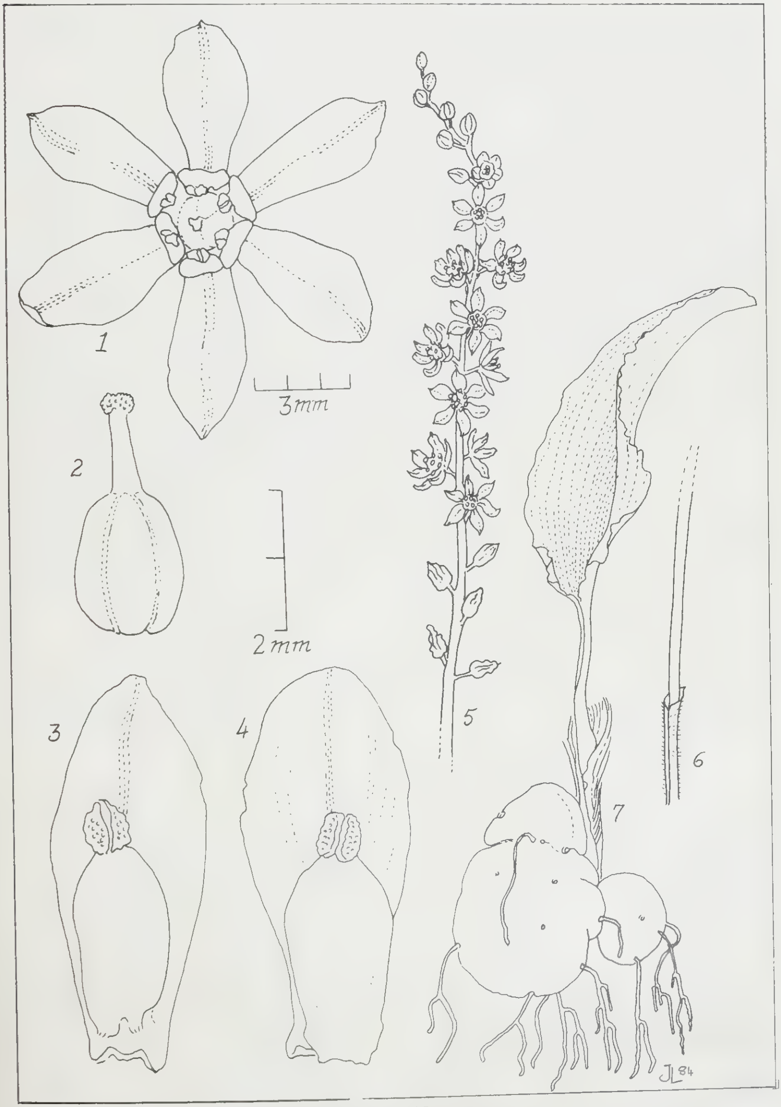

FIG. 12.

*Eriospermum bayeri*. 1. Flower, face view; 2. Gynoecium; 3. Outer perianth segment and stamen; 4. Inner perianth segment and stamen; 5. Inflorescence; 6. Peduncular bract and base of scape; 7. Tuber and leaf natural size. (*Perry 51*, NBG).

1.5 mm diameter, dark red just above ground level shading to glaucous green near the lamina, glabrous; lamina lanceolate when mature, up to 100 mm long and 25 mm wide, young leaves almost prostrate and ovate-cordate for the first 1–2 years, glaucous green both surfaces, glabrous, margin entire slightly undulate, base acuminate, apex acute. *Scape* up to 300 mm long and 2,5 mm diameter, glaucous green with tiny white dashes all over, above paler with red markings, glabrous; peduncular bract exserted up to 30 mm, green or purplish-red, fleshy, puberulous, apex retrorse. *Raceme* densely spicate, up to 150 mm long and 25 mm across with up to 70 flowers. *Bracts* variable, either slightly saccate-attenuate and up to 1,5 mm long or very small, almost obsolete and remote from the base of the pedicel, transparent-membranous with green keel. *Pedicels* 2–7 mm long, patent, pale green. *Perianth* rotate about 12 mm diameter; segments tending to be recurved in the afternoon, equal to subequal, spathulate, up to 5,5 mm long and 3 mm wide, pale green with a darker green keel and reddish streaks at the apex. *Stamens* erect connivent forming a ring round the ovary; filaments joined to the extreme base of the segments, lorate to spathulate, apiculate, 3 mm long and 1,5 mm wide, outer slightly narrower than inner, white; anthers yellow, introrse, versatile. *Ovary* ovoid about 2 mm high and 1,5 mm diameter, bright green. *Style* cylindrical, 1,25 mm long, white, stigma translucent, minutely papillose. *Capsule* surrounded by persistent perianth parts, carpels irregularly bi-lobed, apex depressed. Seeds covered with white silky hairs approximately 8 mm long.

Flowering time: March to May. Leafing period: April to October.

Distribution: *E. bayeri* is found in the Worcester–Robertson Karoo and in the Ceres or Tanqua Karoo north to the vicinity of Calvinia. It grows in dry, stony karroid areas on either flattish ground or on lower slopes of koppies of Malmesbury or Bokkeveld shales. (Fig. 13c).

This species has previously been confused with *E. lanceifolium* Jacq. because of the similarity in leaf shape. The leaf of *E. bayeri* however, has a uniform glaucous green colour, is always entirely glabrous and has a thinner texture than that of *E. lanceifolium*, which is more blue in colour, often becoming reddish on the lower part of the underside, also the leaf sheath and the underside of the leaf are often finely pilose. In pressed specimens *E. lanceifolium* leaves show a distinctive dark stippling not seen in leaves of *E. bayeri. E. lanceifolium* shows a preference for sandy soils, whereas *E. bayeri* is confined to clayey soils.

*E. bayeri* is most closely related to *E. zeyheri* and it is difficult to find any consistent points of difference between these two species in the flowering stage. The peduncular bract of *E. bayeri* is amplexicaul for a greater distance with the apex not opening out to become green and leaf-like as in *E.*

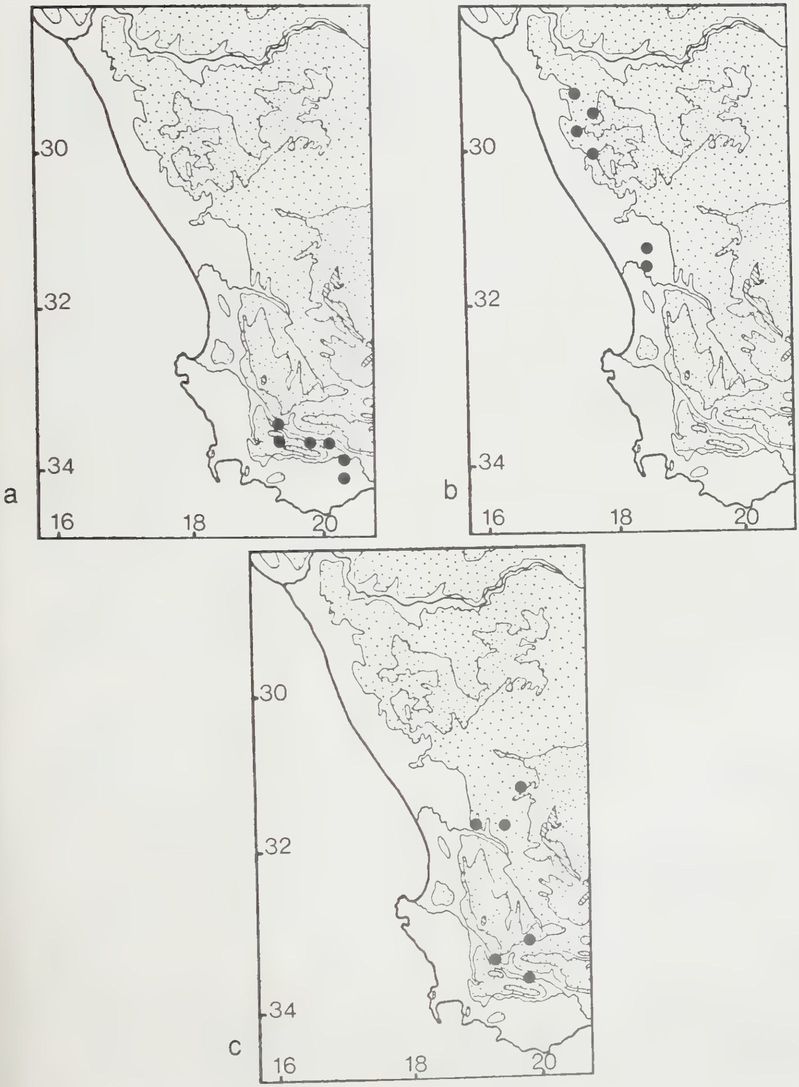

FIG. 13.

(a) Distribution of *Eriospermum breviscapum*; (b) Distribution of *Eriospermum descendens*; (c) Distribution of *Eriospermum bayeri*.

*zeyheri*. In leaf they are clearly distinct species. *E. bayeri* is confined to winter rainfall areas in the western Cape, whereas *E. zeyheri* tends to be in summer rainfall areas in the eastern Cape.

This species is named in honour of Mr. Bruce Bayer, curator of the Karoo Botanic Garden, who first introduced me to the genus *Eriospermum*, and in particular this species found in the veld reserve of the Karoo Botanic Garden.

## SPECIMENS EXAMINED

CAPE PROVINCE—3119 (Calvinia): Akerendam (-BD), *Perry 987* (NBG); 3 km south of Doringbos (-CC), *Perry 1880* (NBG); Die Bos (-DC), *Perry 889*.
—3319 (Worcester): Hex River Pass (-BD), *Perry 449* (NBG); Karoo Botanic Garden Reserve, Worcester (-CB), *Perry 51* (NBG); Worcester West, *Perry 1359* (NBG); Karoo Koppie, Robertson (-DD), *Duthie 629a, 629b, 638, 639* (STE); 3 km east of Robertson, *Perry 966* (NBG).

## ACKNOWLEDGEMENTS

Too many colleagues and friends have helped in my efforts to collect material of *Eriospermum* to mention them all by name but my sincere gratitude is extended to all of them. Especial thanks are due to Mrs. Jeanette Loedolff, for her patient care with the illustrations and to Miss Deirdré Snijman for her invaluable guidance.

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